

## **New Uropodina records from Switzerland (Acari: Mesostigmata) with the description of *Discourella helvetica* n. sp.**

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**New Uropodina records from Switzerland (Acari: Mesostigmata) with the description of *Discourella helvetica* n. sp.** - 24 Uropodina species were collected in several part of Switzerland. Eleven species are new to the fauna and one species (*Discourella helvetica* n. sp.) is new to science. Localities for all species, and description, original drawings and scanning micrographs of the new species are given.

**Keywords:** Acarology - turtle mites - taxonomy - faunistics.

### INTRODUCTION

The Uropodina are one of the most poorly known mite groups in the soil, moss and leaf litter of the temperate zone. Some countries of Europe (e.g. Slovakia, Poland, Romania, German and Hungary) are well investigated, but the Uropodina of other European countries are poorly known. The Uropodina fauna of Switzerland belongs to the least-known in Europe; previously 36 species were reported from this country (Wiśniewski, 1993).

Investigation of the mite fauna of Switzerland started in the first part of the 20th century. The first researcher who studied the mite fauna of this country was the excellent acarologist Josef Schweizer, who presented several papers on the soil mites of the Swiss National Park; these papers contain some records of Uropodina as well (Schweizer, 1922, 1949, 1957). Schweizer (1922, 1961) described the following species from Switzerland: *Discourella dubiosa* (Schweizer, 1961), *Iphidinychus gaieri* (Schweizer, 1961), *Uropoda subterrana* (Schweizer, 1922), *Uropoda parva* (Schweizer, 1961) and *Uroseius hunzikeri* Schweizer, 1922. Some years later Hirschman (1978) described another species from this country (*Trichouropoda schweizeri* Hirschmann, 1978); after that Bühlmann (1980) presented the description of *Uroobovella jerzyi* Bühlmann, 1980 from Switzerland.

The main goal of the present paper is to contribute to the knowledge of the Uropodina fauna of Switzerland.

### MATERIALS AND METHODS

The specimens were cleared with lactic acid and drawn by using a drawing tube. Scanning micrographs were taken in the Hungarian Natural History Museum, Budapest with a HITACHI SN 2600 scanning electron microscope; the specimens investigated were spatter-coated with gold-palladium. The holotype of the new species

and most specimens of the other species are stored in alcohol and deposited in the Natural History Museum of Geneva (MHNG), the paratypes of the new species and some specimens of the other species in the Soil Zoology Collections of the Hungarian Natural History Museum, Budapest (HNHM). For identification I used Karg's (1989) and Mařán's (2001) books. The taxonomic system used is adopted from Kontschán's (2008) work except for the *Cilliba* species, which follow the system of Stachowiak *et al.* (2008). Measurements are given in micrometers ( $\mu\text{m}$ ).

#### LIST OF COLLECTING SITES

- AP-3 Switzerland, Appenzell, Schwägalp, sifting, 1375 m, 11.IX.1981, leg. C. Besuchet.
- BE-5 Switzerland, Berne, Kirchenberg, dry leaves in mixed forest, 13.IX.1987, leg. S. Mahunka & L. Mahunka-Papp.
- BE-6 Switzerland, Berne, Napf, Mettlenalp, sifting, 100 m, 10.VII.1984, leg. C. Besuchet.
- BE-8 Switzerland, Berne, Uebischisee, near Thun, moss at edge of swamp border, 6.VI.1996, leg. C. Besuchet.
- GE-10 Switzerland, Geneva, Allondon, Malval, root and sand, 22.X.1982, leg. C. Besuchet.
- GL-1 Switzerland, Glarus, Ennenda, hollow maple, 17.IX.1987, leg. C. Besuchet.
- GR-7 Switzerland, Grisons, Maloja, Lake Cavloc, sifting, 2050 m, 27.VIII.1968, leg. C. Besuchet.
- JU-1 Switzerland, Jura, Damphreux, lakeside, *Salix* sp. and grass, 24.III.1995, leg. C. Besuchet.
- LU-4 Switzerland, Lucerne, Schüpfheim, mole nests, 27.III.1979, leg. C. Besuchet.
- NE-2 Switzerland, Neuchatel, Vaumarcus, at base of maples, 6.XII.1984, leg. C. Besuchet.
- SG-3 Switzerland, St. Gall, Oberuzwil, mosses and reeds at edge of pond, 9.XI.1987, leg. C. Besuchet.
- SH-2 Switzerland, Schaffhausen, Osterfingen, dead branches at base of oak, 11.VI.1988, leg. C. Besuchet.
- TG-2 Switzerland, Thurgau, Hudelmoos near Hagenwil, peat-bog, 6.V.1989, leg. C. Besuchet.
- TI-38 Switzerland, Ticino, Ascona, Monte Verità, dead leaves and soil, 450 m, 5.XI.1982, leg. C. Besuchet.
- TI-39 Switzerland, Ticino, Stabio, moss and grass at edge of Gaggiolo, 8.XI.1984, leg. C. Besuchet.
- VD-7 Switzerland, Vaud, Le Séchey, Lake Ter, under willows, sifting, 1017 m, 21.VI.1989, leg. C. Besuchet.
- VS-9 Switzerland, Valais, Gondo, beech forest, sifting, 800 m, 13.IX.1984, leg. C. Besuchet.
- VS-12 Switzerland, Valais, Grand Saint Bernard, moss on and at base of rocks, 2150 m, 10.IX.1996, leg. C. Besuchet.
- VS-18 Switzerland, Valais, Mauvoisin, at base of rock, 1800 m, 15.V.1990, leg. C. Besuchet.

## LIST OF SPECIES COLLECTED

## TRACHYTIDAE Trägårdh, 1938

*Trachytes aegrota* (C. L. Koch, 1841)

LOCALITIES: VS-18, BE-5, NE-2, GL-1, SG-3, GR-7 (deposited in MHNG and HNHM).

DISTRIBUTION: Europe.

*Trachytes lamda* Berlese, 1904

LOCALITY: NE-2 (deposited in MHNG).

DISTRIBUTION: Europe.

REMARK: This is the first record of this species in Switzerland.

## POLYASPINIDAE Berlese, 1917

*Polyaspinus cylindricus* Berlese, 1916

LOCALITIES: GL-1, GE-10 (deposited in MHNG).

DISTRIBUTION: Europe.

REMARK: This is the first record of this species in Switzerland.

*Polyaspis sansonei* Berlese, 1916

LOCALITY: TI-39, GE-10 (deposited in MHNG).

DISTRIBUTION: Germany, Italy, Poland, Slovakia.

## TREMATURIDAE Berlese, 1917

*Trichouropoda ovalis* (C. L. Koch, 1839)

LOCALITIES: GL-1, SH-2, JU-1, TI-39 (deposited in MHNG).

DISTRIBUTION: Europe.

*Trichouropoda elegans* (Kramer, 1882)

LOCALITY: SH-2 (deposited in MHNG).

DISTRIBUTION: Northern and Central Europe.

*Trichouropoda pecinai* Hirschmann & Wiśniewski, 1986

LOCALITY: VS-18 (deposited in MHNG).

DISTRIBUTION: Slovakia.

REMARK: This is the first record of this species in Switzerland.

*Nenteria ritzemai* (Oudemans, 1903)

LOCALITY: VS-12 (deposited in MHNG).

DISTRIBUTION: Netherlands, Belgium, Germany.

REMARK: This is the first record of this species in Switzerland.

## URODINYCHIDAE Berlese, 1917

*Dinychus perforatus* Kramer, 1882

LOCALITIES: VS-18, BE-6, SH-2, VS-12, AP-3 (deposited in MHNG).

DISTRIBUTION: Europe.

***Dinychus inermis*** (C. L. Koch, 1841)

LOCALITY: VD-7 (deposited in MHNG).

DISTRIBUTION: Europe.

***Dinychus bincheaecarinatus*** Hirschmann, Wagrowska-Adamczyk & Zirngiebl-Nicol, 1984

LOCALITY: GL-1 (deposited in MHNG).

DISTRIBUTION: France, Germany, Poland, Slovakia, Hungary.

***Dinychus undulatus*** Sellnick, 1945

LOCALITY: JU-1 (deposited in MHNG).

DISTRIBUTION: Germany, Poland, Romania, Russia.

REMARK: This is the first record of this species in Switzerland.

***Urodiaspis tecta*** (Kramer, 1876)

LOCALITIES: NE-2, SG-3, TG-2 (deposited in MHNG).

DISTRIBUTION: Europe.

***Uroobovella pulchella*** (Berlese, 1904)

LOCALITY: GL-1 (deposited in MHNG).

DISTRIBUTION: Europe.

REMARK: This is the first record of this species in Switzerland.

***Uroobovella minima*** (C. L. Koch, 1841)

LOCALITY: BE-8 (deposited in MHNG).

DISTRIBUTION: Europe.

REMARK: This is the first record of this species in Switzerland.

## TRACHYUROPODIDAE Berlese, 1917

***Oplitis franzi*** Hirschmann & Zirngiebl-Nicol, 1969

LOCALITY: BE-8 (deposited in MHNG).

DISTRIBUTION: From Spain to Poland.

REMARK: This is the first record of this species in Switzerland.

## UROPODIDAE Berlese, 1900

***Neodiscopoma pulcherrima*** (Berlese, 1903)

LOCALITIES: VS-9, TI-38, GL-1, SH-2, TI-39 (deposited in MHNG).

DISTRIBUTION: Europe.

***Cilliba cassidea*** (Hermann, 1804)

LOCALITIES: BE-6, BE-5, NE-2, SH-2 (deposited in MHNG).

DISTRIBUTION: Europe.

*Cilliba erlangensis* Hirschmann & Zirnbiegl-Nicol, 1969

LOCALITIES: NE-2, JU-1 (deposited in MHNG).

DISTRIBUTION: Germany, Poland, Russia, Czech Republic, Hungary.

REMARK: This is the first record of this species in Switzerland.

*Uropoda minima* Kramer, 1882

LOCALITIES: SG-3, TG-2 (deposited in MHNG).

DISTRIBUTION: Europe.

*Uropoda orbicularis* (Müller, 1776)

LOCALITY: GR-7 (deposited in MHNG).

DISTRIBUTION: Europe.

## DISCOURELLIDAE Baker &amp; Wharton, 1952

*Discourella cordieri* (Berlese, 1916)

LOCALITIES: VS-9, LU-4, SH-2, GE-10, TI-39 (deposited in MHNG).

DISTRIBUTION: France, Belgium, Germany, Poland, Czech Republic.

*Discourella modesta* (Leonardi, 1899)

LOCALITY: VS-9 (deposited in MHNG).

DISTRIBUTION: Europe to Israel.

REMARK: This is the first record of this species in Switzerland.

*Discourella helvetica* sp. n.

Figs 1-10

HOLOTYPE: MHNG, without registration number; female; Switzerland, Ticino, Ascona, Monte Verità, 450 m, from dead leaves and soil; 5.XI.1982; leg. C. Besuchet.

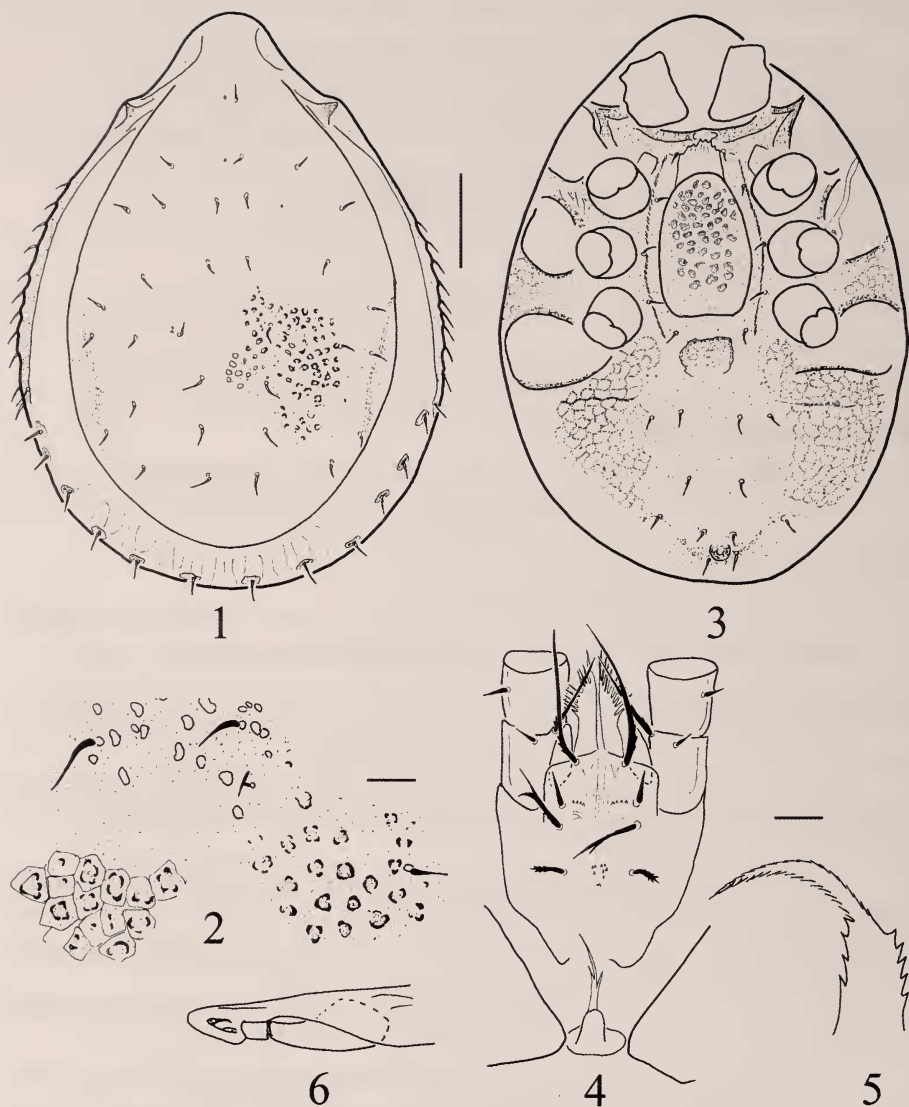
PARATYPES: MHNG, without registration number; two females in alcohol; HHNM, without registration number; one female with gold-palladium coating and stored on aluminium stub; all with same data as for holotype.

DIAGNOSIS: All dorsal, marginal and postdorsal setae needle-like. Postdorsal and marginal shields lacking, postdorsal setae are placed on small platelets. Genital shield of female linguliform, situated between coxae II and IV, with irregular pits on its surface and bearing a crown-like process on its anterior margin.

DESCRIPTION OF FEMALE: Length of idiosoma 610-620  $\mu$  m, width 430-440  $\mu$  m (n=4). Body shape oval, posterior margin rounded.

*Dorsal aspect of idiosoma* (Fig. 1): All dorsal setae short, smooth and needle-like. Dorsal shield with irregular pits (Fig. 2), marginal shield lacking. Margins of idiosoma bearing needle-like setae. Postdorsal shield lacking, postdorsal setae similar to dorsal setae and placed on small and rounded platelets.

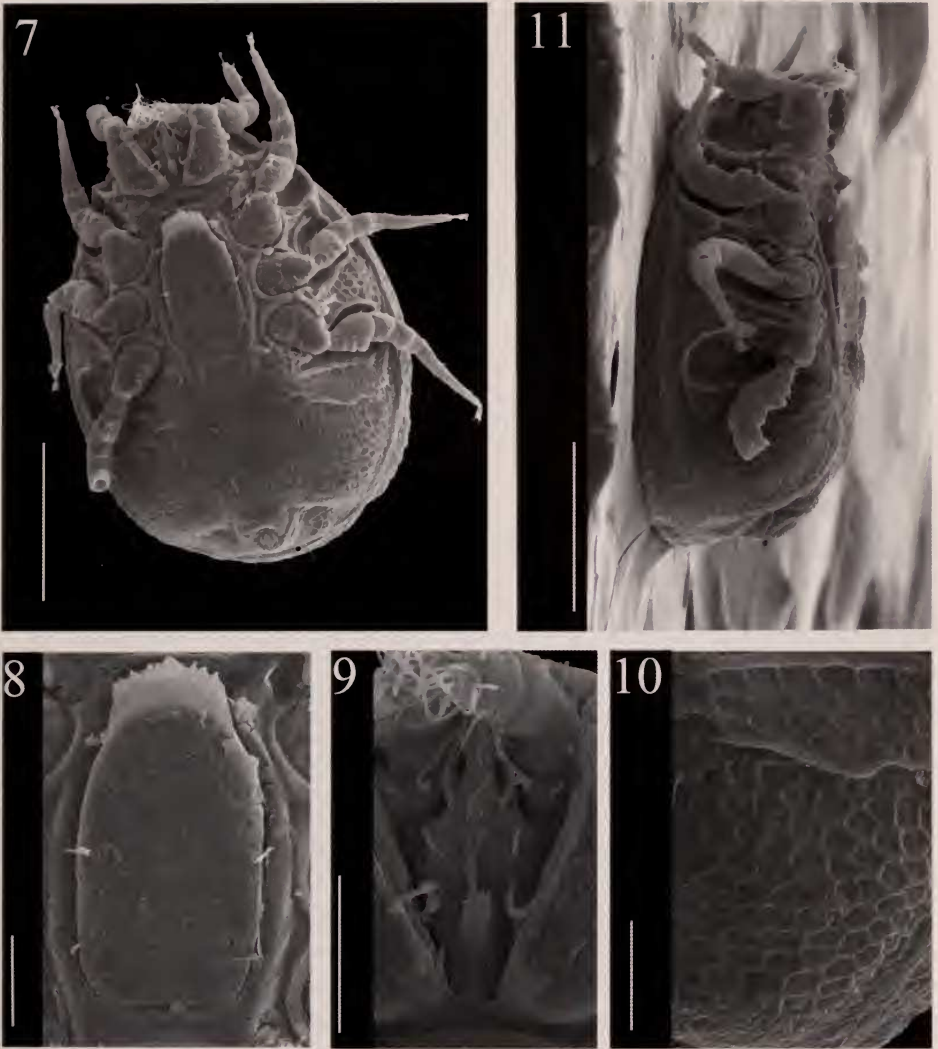
*Ventral aspect of idiosoma* (Figs 3, 7): Ornamentation of sternal shield lacking, all sternal setae short, smooth and needle-like. Ventral shield bearing an irregularly formed depression near basal part of genital shield. All ventral setae short, smooth and needle-like. Metapodal lines well developed, surface near metapodal lines (Fig. 10) and between metapodal lines covered by large irregular pits (Fig. 11), central part of ventral shield without sculptural pattern. Stigmata situated near coxae III. Peritremes straight. Genital shield of female linguliform, placed between coxae II and IV, with small irregular pits and with crown-like process on its anterior margin (Fig. 8).



FIGS 1-6

*Discourella helvetica* n. sp., female holotype. (1) Body in dorsal view. (2) Ornamentation of dorsal shield. (3) Body in ventral view. (4) Ventral view of gnathosoma. (5) Epistome. (6) Chelicera. Scale bars: 100  $\mu$ m (1, 3), 20  $\mu$ m (2, 4-6).

*Gnathosoma* (Figs 4, 9): Corniculi horn-like, internal malae long and apically serrate. Hypostomal setae: h1 long, smooth, setiform bearing spines basally; h2 0.25% of h1, smooth and setiform; h3 two times longer than h2 and apically bifurcated; h4 as long as h2, their margins serrate. Epistome basally serrate and apically pilose (Fig. 5). Tritosternum with narrow basis, apically subdivided into three visible branches. Chelicerae without nodes, fixed digit longer than movable digit (Fig. 6).



FIGS 7-11

Scanning micrographs of *Discourella helvetica* n. sp., female paratype. (7) Body in ventral view. (8) Genital region. (9) Ventral view of gnathosoma. (10) Ornamentation on lateral side of body. (11) Body in lateral view. Scale bars: 100  $\mu\text{m}$  (7, 11), 20  $\mu\text{m}$  (8-10).

*Legs.* Coxae of legs ornamented with alveolar pits, surface of other leg segments smooth. All legs bearing ambulacral claws and smooth and needle-like setae. Male, nymphs and larva unknown.

*ETYMOLOGY:* The species name, an adjective, refers to the Latin name of Switzerland (Helvetia).

*REMARKS:* The new species belongs to the *stammeri*-species group (see Hirschmann 1972). Four known species were previously placed in this group; their

common character is the absence of the marginal shield. Only one of these species is known from Europe (*D. stammeri* Hirschmann & Zirngiebl-Nicol, 1969), one species was described from Japan (*D. fumiakii* Hiramatsu, 1980), another one was found in Mongolia (*D. kaszabi* Hirschmann, 1972), and the occurrence of the fourth species (*D. eustructura* Hirschmann, 1972) is unknown. The most important differences between these four species and the new species are summarized in Table 1.

TABLE 1. Distinguishing characters of the species in the *Discourella stammeri* species group

	<i>D. helvetica</i>	<i>D. stammeri</i>	<i>D. kaszabi</i>	<i>D. eustructura</i>	<i>D. fumiakii</i>
Depression near basal part of genital shield	present	absent	absent	absent	present
Ornamentation of dorsal shield	pits with irregular shape	pits with alveolar shape	reticulate surface	reticulate surface	pits with irregular shape
Dorsal and marginal setae	smooth and needle-like	smooth and needle-like	apically pilose	smooth and needle-like	apically pilose

## REFERENCES

- BÜHLMANN, A. 1980. Gangsystematische Darstellung von *Uroobovella jerzyi* n. sp. (Acari: Uropodina). *International Journal of Acarology* 6(4): 301-308.
- HIRSCHMANN, W. 1972. Gangsystematik der Parasitiformes, Teil 114. Adulten-Gruppen und Rückenflächenbestimmungstabelle von 34 *Discourella*-Arten (Uropodini, Uropodinae). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde* 19: 26-29.
- HIRSCHMANN, W. 1978. Gangsystematik der Parasitiformes, Teil 273. Stadien von 3 neuen *Trichouropoda*-Arten aus der Verwandtschaft um *Trichouropoda obscura* (C.L.Koch, 1836) aus Kanada, Mexiko und der Schweiz (Trichouropodini, Uropodinae). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde* 24: 43-45.
- KARG, W. 1989. Acari (Acarina), Milben Unterordnung Parasitiformes (Anactinochaeta), Uropodina Kramer. Schildkrötenmilben. *Die Tierwelt Deutschlands* 67: 1-203.
- KONTSCHÁN, J. 2008. Magyarországi korongatkái (Acari: Mesostigmata: Uropodina). (Turtle mites of Hungary (Acari: Mesostigmata: Uropodina). *Állattani Közlemények* 93(1): 3-15.
- MAŠÁN, P. 2001. Mites of the cohort Uropodina (Acari, Mesostigmata) in Slovenska. *Annotationes Zoologicae et Botanicae* 223: 1-320.
- SCHWEIZER, J. 1922. Beitrag zur Kenntnis der terrestrischen Milbenfauna der Schweiz. *Verhandlungen der Naturforschenden Gesellschaft in Basel* 33: 23-111.
- SCHWEIZER, J. 1949. Die Landmilben des Schweizerischen Nationalparks, 1. Teil, Parasitiformes Reuter 1909. *Ergebnisse der Wissenschaftlichen Untersuchung des Schweizerischen Nationalparks* 2(21): 1-99.
- SCHWEIZER, J. 1957. Die Landmilben des Schweizerischen Nationalparks. *Ergebnisse der wissenschaftlichen Untersuchungen des schweizerischen Nationalparks* 4(37): 11-107.
- SCHWEIZER, J. 1961. Die Landmilben der Schweiz (Mittelland, Alpen, Jura). Parasitiformes Reuter. *Denkschriften der Schweizerischen Naturforschenden Gesellschaft* 84: 1-201.
- STACHOWIAK, M., HALLIDAY, B. & BŁOSZYK, J. 2008. Review of the genus *Cilliba* von Heyden (Acari: Uropodina: Cillibidae). *Zootaxa* 1881: 1-42.
- WIŚNIEWSKI, J. 1993. Gangsystematik der Parasitiformes. Teil 549. Die Uropodiden der Erde nach zoogeographischen Regionen und Subregionen geordnet (mit Angabe der Lande). *Acarologie. Schriftenreihe für Vergleichende Milbenkunde* 40: 221-291.